

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (cancelled)

Claim 2 (previously presented): The liquid separator of claim 22 wherein a tapered portion of the output passage extends over at least about half of the output passage length along said region.

Claim 3 (previously presented): The liquid separator of claim 22 wherein the input passage is formed such that the cross sectional area of the input passage taken generally transverse to a flow direction in the input passage decreases in a tapered manner along the flow direction toward the output end of the input passage in at least a portion of the region along the
5 passages.

Claim 4 (previously presented): The liquid separator of claim 3 wherein a tapered portion of the input passage extends over at least about half of the input passage length in said region.

Claim 5 (previously presented): The liquid separator of claim 3 wherein the cross sectional area profiles of the input and output passages are formed by positioning said wall separating the input and output passages in an angular position with respect to longitudinal flow directions of the input and output passages.

Claim 6 (previously presented): The liquid separator of claim 22 wherein a vacuum means is connectable to the output end of the output passage by using a conduit connected without bends to the output end of the output passage.

Claim 7 (previously presented): The liquid separator of claim 22 wherein the input passage and the output passage are concentric tubular passages separated from each other by a tubular

and cone shaped wall formed of a gas permeable and liquid impermeable material, the cone shaped wall tapering toward the output ends of the passages along said region.

Claim 8 (previously presented): The liquid separator of claim 22 wherein the tapering angle of the output passage is between the values 30 degrees and 0.5 degrees.

Claim 9 (previously presented): The liquid separator of claim 22 wherein the liquid separator includes a liquid receiving means, which is connected to the output end of the input passage for receiving the second portion of the gas and the liquid in the liquid receiving means.

Claim 10 (cancelled)

Claim 11 (previously presented): The liquid separator of claim 24 wherein a tapered portion of the input passage extends over at least about half of the input passage length in said region.

Claim 12 (previously presented): The liquid separator of claim 24 wherein the tapering angle of the input passage is between the values 30 degrees and 0.5 degrees.

Claim 13 (previously presented): The liquid separator of claim 24 wherein the liquid separator includes a liquid receiving means, which is connected to the output end of the input passage for receiving the second portion of the gas and the liquid in the liquid receiving means.

Claim 14 (cancelled)

Claim 15 (previously presented): The method of claim 26 wherein the profile of the gas velocity along an input end portion of the output passage is approximately similar to the profile of the gas velocity along an input end portion of the input passage.

Claim 16 (previously presented): The method of claim 26 wherein the profile of the gas velocity along an output end portion of the input passage is approximately similar to the profile of the gas velocity along an output end portion of the output passage.

5 Claim 17 (previously presented): The liquid separator of claim 2 wherein the input passage is formed such that the cross sectional area of the input passage taken generally transverse to a flow direction in the input passage decreases in a tapered manner along the flow direction toward the output end of the input passage in at least a portion of the region along the passages.

Claim 18 (previously presented): The liquid separator of claim 17 wherein the tapered portion of the input passage extends over at least about half of the input passage length in said region.

Claim 19 (previously presented): The liquid separator of claim 3 wherein a vacuum means is connectable to the output end of the output passage by using a conduit connected without bends to the output end of the output passage.

Claim 20 (previously presented): The liquid separator of claim 3 wherein the input passage and the output passage are concentric tubular passages separated from each other by a tubular and cone shaped wall formed of a gas permeable and liquid impermeable material, the cone shaped wall tapering toward the output ends of the passages along said region.

Claim 21 (previously presented): The liquid separator of claim 4 wherein the input passage and the output passage are concentric tubular passages separated from each other by a tubular and cone shaped wall formed of a gas permeable and liquid impermeable material, the cone shaped wall tapering toward the output ends of the passages along said region.

Claim 22 (currently amended): A liquid separator for removing liquid from a gas to be analyzed in a gas analyzer, said liquid separator comprising:

an input passage having an input end to which a gas sample containing liquid is supplied, the input passage having an output end;

5 an output passage having a first end and a second, output end; and

a wall formed of a gas permeable and liquid impermeable material separating the input passage and the output passage in a region lying between the ends of the passages and along which region the passages lie on opposite sides of said wall, a first portion of the gas passing, in said region, through said wall from the input passage to the output passage for
10 discharge from the output end of the output passage as the gas to be analyzed, a second portion of the gas sample and the liquid remaining in the input passage for discharge from the output end of the input passage;

the output passage being formed such that the cross sectional area of the output passage taken generally transverse to a flow direction in the output passage increases in a
15 tapered manner along the flow direction toward the output end of the output passage in at least a portion of the region along the passages in which the passages lie on opposite sides of said wall, the tapering being in an amount that causes the flow of gas along the passages to generate similar gas velocity profiles along the input and output passages.

Claim 23 (previously presented): The liquid separator of claim 8 wherein the tapering angle of the output passage is more than 3 degrees but less than 20 degrees.

Claim 24 (currently amended): A liquid separator for removing liquid from a gas to be analyzed in a gas analyzer, said liquid separator comprising:

an input passage having an input end to which a gas sample containing liquid is supplied, the input passage forming a gas flow passage in said separator and having an output
5 end;

an output passage having a first end and a second, output end; and

a wall formed of a gas permeable and liquid impermeable material separating the input passage and the output passage in a region lying between the ends of the passages and along which region the passages lie on opposite sides of said wall, a first portion of the gas
10 passing, in said region, through said wall from the input passage to the output passage for discharge from the output end of the output passage as the gas to be analyzed, a second portion of the gas sample and the liquid remaining in the input passage for discharge from the output end of the input passage;

the input passage and output passages having cross sectional areas generally
15 transverse to a flow direction in the passages, the input passage being formed such that the cross sectional area of the input passage taken generally transverse to a flow direction in the input passage decreases in a tapered manner along the flow direction toward the output end of the input passage in at least a portion of the region along the passages in which the passages lie on opposite sides of said wall and adjacent said output end of said input passage, the cross sectional
20 area of the input passage adjacent the input end of the input passage being greater than the cross sectional area of the output passage adjacent its input end by amount that causes the flow of gas along the tapered passages to generate similar gas velocity profiles along the input and output passages.

Claim 25 (previously presented): The liquid separator of claim 12 wherein the tapering angle of the input passage is more than 3 degrees but less than 20 degrees.

Claim 26 (previously presented): A method for separating a small quantity of liquid from a gas stream to provide a large volume of gas from which the liquid has been separated, the gas stream intermittently containing a quantity of gas of interest to be analyzed in a gas analyzer, the separation being carried out in a manner that minimizes alteration of a response time of
5 the gas analyzer, said method comprising the steps of:

providing the gas stream containing the small quantity of liquid and the intermittently appearing gas quantity of interest to an input end of an input passage of a separator; and

dividing the gas stream into two parts by using the input passage having an
10 input end receiving the gas stream, the input passage having an output end; an output passage
of the separator having a first end and a second, output end; and a gas permeable and liquid
impermeable wall separating said two passages in a region in which the passages lie on
opposite sides of the wall, a major part of the gas stream passing from the input passage
through the wall to the output passage for supply to a gas analyzer at the output end of the
15 output passage, a minor part of the gas stream, as well as the liquid, remaining in the input
passage for discharge at the output end of the input passage;

the passages being so formed that the cross sectional areas of the input and
output passages generally transverse to flow directions in the passages are varied such that
the profile of the gas velocity along at least a portion of the output passage and the profile of
20 the gas velocity along at least a corresponding portion of the input passage are
approximately similar, the similar gas velocity profiles in the passages causing the gas
quantity of interest to be analyzed to be presented to the gas analyzer in a form that
minimizes alteration of the response time of the gas analyzer to the intermittent gas quantity
of interest to be analyzed.

Claim 27 (previously presented): The liquid separator of claim 3 wherein said output passage
and said input passage are formed such that the cross sectional area increase in the former
and the cross sectional area decrease in the latter cause similar gas velocity profiles along the
passages.